DOCUMENT RESUME

ED 424 535 CG 028 847

AUTHOR Espelage, Dorothy L.; Quittner, Alexandra L.; McKenna, Molly C.; Sherman, Roberta; Thompson, Ron

TITLE Treatment Outcome in Eating Disorders: A One-Year Follow-Up.

PUB DATE 1998-08-00

NOTE 35p.; Paper presented at the American Psychological Association Annual Convention (106th, San Francisco, CA, August 14-18, 1998).

PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)

EDRS PRICE EDRS Price MF01 Plus Postage. PC Not Available from EDRS.

DESCRIPTORS *Eating Disorders; *Females; Medical Services; *Outcomes of Treatment; Therapy

ABSTRACT

The effectiveness of an outpatient eating disorders treatment program was evaluated for 50 women over a 1-year follow-up period. Unlike many eating disorders programs now in place, this data was collected at a time when this program had relatively few exclusion criteria for potential participants; anyone with an eating disorder not requiring intensive inpatient medical care was allowed to enroll. Methods, procedures, and measures used are described. Findings are presented in two sections: (1) changes in eating disorders symptomalogy and associated features from pretreatment to immediate posttreatment; and (2) findings from the 1-year follow-up. Results indicate that women who attended an 8-week outpatient program for eating disorders demonstrated significant improvement from pretreatment to immediate posttreatment; that is, a decrease in depression and disordered eating was found. Several pretreatment variables were found to be predictive of clinician-rated success at the end of treatment. Examination of follow-up responses yielded three interesting groups including participants who were symptom free, those who were depressed but reported no eating disordered symptoms, and a group that reported both clinical levels of depression and disordered eating thoughts and behaviors. These findings are discussed. (Contains 7 tables and 26 references.) (Author/EMK)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Running Head: EATING DISORDERS TREATMENT AND OUTCOME

ED 424 535

Treatment Outcome in Eating Disorders: A One-Year Follow-Up

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

D. ESPELAGE

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

Dorothy L. Espelage, Ph.D.

University of Illinois, Urbana-Champaign

Alexandra L. Quittner, Ph.D.

Indiana University

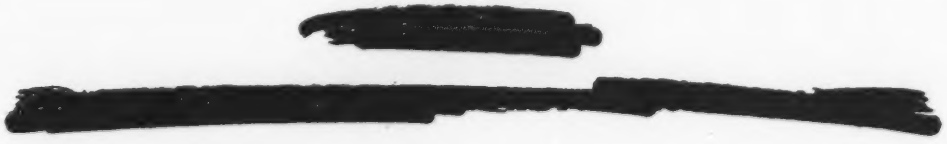
Molly C. McKenna, M.S.

University of Illinois, Urbana-Champaign

Roberta Sherman, Ph.D. & Ron Thompson, Ph.D.

Bloomington Hospital Eating Disorders Program

Paper presentation at the 1998 Annual Meeting of the American Psychological Association, San Francisco, CA. In symposium Espelage, D. (Chair), Eating Disorders: New insights into development and treatment.



Address inquiries to Dorothy L. Espelage, Ph.D., Department of Educational Psychology, University of Illinois, 230 Education Building, 1310 South Sixth St., Champaign, IL 61820-6990; 217-333-9139, email: espelage@uiuc.edu.

CG028847

BEST COPY AVAILABLE

Introduction

The most recent Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association, 1994) characterizes eating disorders as a gross disturbance in eating behavior. The two major eating disorders, anorexia nervosa and bulimia nervosa, typically begin in adolescence or early adulthood (American Psychiatric Association, 1994). Although estimates of the incidence and prevalence of eating disorders in the general population vary, Hsu (1996) found that anorexia nervosa affects about .5% of young women in western cultures and bulimia nervosa about 2%. He concluded that eating disorders are one of the most common psychiatric disorders affecting young women.

Cognitive-behavioral approaches have been found to be among the most common and effective programs for the treatment of bulimia and anorexia (e.g., Wilson & Fairburn, 1993). Despite the plethora of research support for this treatment approach, many investigations find that a substantial percentage of women continue to report disordered eating symptoms after completion of treatment (Davis, Olmsted & Rockert, 1992; Hsu & Holder, 1986; Hsu & Sobkiewicz, 1989; Johnson-Sabine, 1992; Keller, Herzog, Lavori, Bradburn, Mahoney, 1992). For example, Davis and colleagues found that 51% of 41 women who participated in a 4-week psychoeducational treatment program for eating disorders reported more than four binge-purge episodes a month at immediate post-treatment. Some may argue that this result is not surprising given the short duration of the treatment; however, similar results were reported for 56 women with bulimia who received two to four months of individual psychotherapy (Hsu & Holder, 1986). In addition, 64% of these women reported clinical levels of depression at the one year post-treatment follow-up, with only 46% included in the "good outcome" group.

Unfortunately, these relatively low rates of success are not limited to short-term evaluations, as parallel findings are reported in longitudinal investigations that include long-term follow-up points. For example, a 31% cure rate, indicating a full recovery, was found in a 5-year follow-up study of 36 women treated for bulimia (Johnson-Sabine, Reiss, & Dayson, 1992), and 47% of the sample were considered to have a good outcome, defined as fewer social problems, higher socio-economic status, and a significant improvement in eating attitudes. Similarly, Hsu and Sobkiewicz (1989) argued that 47% of their sample of women treated for bulimia were completely recovered at a four to six year follow-up point.

These findings indicate that a significant number of women continue to report symptoms of eating disorders despite the fact that they have received treatment. As a result, many researchers have attempted to delineate the pre-treatment variables associated with successful and less successful outcomes in order to understand the differential responsiveness to eating disorders treatment (Blouin et al., 1994; Davis, Olmsted & Rockert, 1992; Sohlberg, Norring, & Rosmark, 1992; Steiger, Leung, Thibaudeau, 1993; Steiger, Stotland, & Houle, 1994). Although it remains difficult to compare findings across studies because of methodological issues (e.g., small sample size, different treatment programs, varying predictors and outcomes), a few consistent findings have emerged in the literature. First, pre-treatment depression levels appear to play an important role in the recovery of women with eating disorders following treatment; women with the highest levels of depression prior to treatment report significant impairment at short and long-term follow-up periods (Davis et al., 1992; Hsu & Sobkiewicz, 1989). Second, in addition to depression, characterological disturbance, such as Borderline Personality Disorder, has also been found to be associated with worse treatment outcomes (Steiger et al., 1994). Finally, because studies utilize many different types of measures, a wide variety of pre-treatment

factors have been implicated as potential prognostic indicators, including social support (Keller, Herzog, Lavori, Bradburn, & Mahoney, 1992; Sohlberg, Norring, & Rosmark, 1992), social adaptation (Steiger et al., 1993), and duration of illness (Hsu & Sobkiewicz, 1986). Thus, no consensus has been reached about which pre-treatment variables are most predictive of treatment outcome. However, information of this nature would be extremely useful for clinicians that have to decide the optimal mode and dose of treatment, including inpatient or outpatient, for individual clients.

The current study evaluated the effectiveness of an outpatient eating disorders treatment program for a sample of 50 women over a one year follow-up period. Despite a small sample size and the absence of a control group, this paper contributes to the eating disorders literature because of two characteristics. Unlike many eating disorders programs now in place, the data for this investigation were collected at a time in which the treatment program under study had relatively few exclusion criteria for potential participants. That is, the co-directors of the treatment program allowed any participant with an eating disorder, except those that required intensive inpatient medical care, to enroll in their program. Over the years they have learned through clinical experience the types of participants that best respond to their outpatient program and more frequently refer women to inpatient or residential treatment programs. The fact that our data collection pre-dated the institution of these exclusion criteria, we were able to follow a sample of women who represent the full range of those likely to seek treatment for eating disorders. In addition, we successfully followed 48 of the 50 women at the one year follow-up period, which represents a significantly larger response rate than those reported in the literature (Shaw & Garfinkel, 1989)

Method

Participants

Participants were recruited for this study over a period of two years from an outpatient eating disorders program located in a Midwestern university community. The co-therapists of the outpatient program distributed an information letter, consent form, and intake questionnaires to all group members during an initial interview. Those who agreed to participate in a treatment outcome study received a payment of $30.00 for completing all measures at pre, post, six month, and 1-year follow-up assessments. Fifty-eight participants volunteered for the study. Of these 58 participants, only 50 completed measures at pre- and immediate post-treatment; three participants dropped out of treatment, two were referred to a residential eating disorders program, and the remaining three refused to complete measures at either pre- or immediate post-treatment. In addition, one participant did not complete testing at six months post-treatment and one did not return her questionnaires at one year post-treatment. Thus, analyses involving pre- to post-treatment comparisons include the full sample of 50 participants, and 48 participants were included in those analyses of pre-treatment to one year post-treatment.

At pre-treatment, all participants were exclusively female, ranging in age from 15 to 29 years (M = 20.78, SD = 3.29), with a range of 9 to 18 years of education completed (M = 13.69, SD = 2.01). Forty-nine were Caucasian, and one participant was African-American. Forty-seven were single, two participants were married, and one was separated. Thirty-six were currently enrolled at a local university, and fourteen were not students at the time of pre-treatment. Twenty-nine participants lived in a dorm or apartment, thirteen lived with their parents, six lived alone, and two lived with a spouse.

Thirty-six participants met the criteria at pre-treatment for bulimia nervosa and fourteen met the criteria for anorexia nervosa from the Diagnostic Statistical Manual of Mental Disorders (DSM-III-R; American Psychiatric Association, 1987) based on a structured clinical interview with the co-therapists of the outpatient program and results of standardized testing (EDI-2, Garner, 1991).

Measures

Participants completed an intake questionnaire, the Center for Epidemiological Studies – Depression Scale (CES-D; Radloff, 1977), the Eating Disorders Inventory – 2 (EDI-2; Garner, 1991), and the Millon Clinical Multiaxial Inventory (MCMI -II; Millon, 1987) at each time point. In addition, participants completed the Anorexia and Bulimia Problem Inventory (ABPI; Eason, 1983) at pre- and immediate post-treatment.

Intake questionnaire. The intake questionnaire contained three sections. The first section included questions about the participants' current weight and height, weight history, age at first diet, menstrual history, time spent thinking about food or weight concerns, and frequency and type of weight control strategies (e.g., fasting, exercising). Current weight of family members, food and weight preoccupation of parents, parents' age and occupation, and psychological problems of family members were assessed in the second section of the intake questionnaire. The third section included items related to the participants' alcohol and drug use and history of psychological treatment.

Center for Epidemiological Studies Depression Scale (CES-D). The CES-D (Radloff, 1977) is a 20-item scale designed to measure current levels of depressive symptomatology and mood in the general population. Respondents are asked to rate the frequency of each symptom over the past week on a 4-point scale. A score of 16 or higher has been used as the clinical cut-

off (Boyd, Weissman, Thompson, & Myers, 1982; Radloff, 1977). Reliability of the CES-D is good, with internal consistencies ranging from .88 to .90 in field studies (Orme, Reis, & Herz, 1986; Radloff, 1977). The alpha coefficient for the current total sample was .94 at pre-testing and .95 at all three post-treatment time points. A recent investigation found the CES-D to be more discriminating of variability in depressive symptoms than the Beck Depression Inventory (Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995).

Eating Disorders Inventory (EDI-2). The EDI-2 (Garner, 1991) is a 91-item self-report measure of symptoms commonly associated with anorexia nervosa and bulimia nervosa. Respondents are asked to indicate whether each item applies to them on a 6-point scale ranging from "always" to "never." Eleven subscales, including three supplemental scales, were created based on literature reviews and large-scale field studies (e.g., Drive for Thinness, Bulimia; Garner, 1991). Internal consistency coefficients ranging from .83 to .93 and test-retest reliability coefficients ranging from .85 to .95 have been reported for the first eight scales, not including the three supplemental scales (Garner, Olmsted, & Polivy, 1983; Raciti & Norcross, 1987; Wear & Pratz, 1987). For the current sample, alpha coefficients for the eight major scales ranged from .68 to .90 ($\underline{M}$ = .82) at pre-treatment, from .76 to .93 ($\underline{M}$ = .85) at immediate post-treatment, from .79 to .94 ($\underline{M}$ = .87) at six months post-treatment, and from .82 to .94 ($\underline{M}$ = .87) at one year post-treatment.

Millon Clinical Multiaxial Inventory (MCMI -II). The MCMI-II is a 175-item true-false personality inventory designed for general assessment and diagnosis. The inventory yields three modifier indices, clinican personality patterns scales, severe personality pathology scales, and clinical and severe syndrome scales covering many of the Axis I and II disorders of DSM-III-R. Internal consistency estimates for the MCMI-II scales average approximately .80, and test-retest

reliability coefficients are good (Millon, 1996). The MCMI-II was administered at all four time points, however, only pre-treatment scores are used in the current paper.

Anorexia and Bulimia Problem Inventory (ABPI). The ABPI (Eason, 1983) is a 42-item behavioral role-play inventory of common problematic situations encountered by women with eating disorders developed according to the behavior-analytic approach proposed by Goldfried and D'Zurilla (1969). This measure is designed to assess effective and ineffective coping strategies used in a variety of situations. Participants in the current study were presented with a series of audiotaped vignettes that included problematic situations concerning family, boyfriend issues, school, and eating or weight. They were asked to respond by describing what they would say or do in each situation. Responses were recorded during a 20-second pause separating each vignette. Four trained raters at pre-testing and two trained raters at immediate post-testing independently assigned a rating according to the ABPI rater's manual (1 = extremely incompetent/ineffective, 2 = somewhat incompetent/ineffective, 3 = somewhat competent/effective, 4 = extremely competent/effective).

The ABPI was further refined using this study sample (ABPI-R, Espelage & Quittner, 1997), and the scores derived from this measure demonstrated good convergent, discriminant, and discriminative validity (Espelage, Quittner, Sherman, & Thompson, under review). Based on expert review of the items, four rationally derived scales were created for the 39-vignette ABPI-R that demonstrated reasonable internal consistency and converged with traditional measures used with a clinical population (i.e., EDI-2, Garner, 1991). The four revised scales were: Eating and Weight, Interpersonal Relationships, Academic Concerns, and Family Concerns. Internal consistencies for these scales ranged from .62 to .78 ($\underline{M}$ = .73) for the current sample at pre-testing and .62 to .69 ($\underline{M}$ = .66) at immediate post-testing, the internal

consistencies for the ABPI-R total scale were .90 for pre-testing and .88 for immediate post-testing. In addition, strong and consistent agreement on the ABPI ratings across raters at pre-treatment and immediate post-testing was found (Espelage, Quittner, & Kamps, 1998). Thus, an average of the raters' scores was used to calculate a competence score for each vignette at pre- and immediate post-treatment.

Procedures

At pre- and immediate post-treatment, each participant was seated in a small testing room for administration of the questionnaires and the 42-item ABPI. After completing the questionnaires, participants were presented with a series of audiotaped vignettes and were given 20 seconds in between each vignette to respond. The entire testing procedure took approximately 50 minutes. Questionnaire packets were mailed to participants six months and one year after completion of the outpatient treatment program, however, the ABPI was not administered at six months and one year following treatment.

Treatment Program.

The Eating Disorders Program is an eight-week, intensive outpatient program that is limited to eight participants at a time. Treatment consists of two, two hour psychotherapy groups per week co-led by two licensed psychologists. Groups are structured, theme-focused, and cognitive-behavioral in orientation. Each group focuses on an issue believed to be central to the development or maintenance of an eating disorder. Every other week, one of the therapy groups is a multi-family group in which participants are asked to bring at least one family member or significant person in their life. In addition, participants meet once a week for a two-hour dietary group led by a registered dietitian. Finally, each program participant is seen once a week for an individual psychotherapy session with one of the licensed psychologists. This constitutes a total

of 7 hours of treatment per week. In addition, there was a one-hour lay-led support group, which was recommended but not required.

Results

Findings from this investigation are presented in two sections. First, changes in eating disorders symptomalogy and associated features from pre-treatment to immediate post-treatment are presented. Second, these same variables, with the exception of the ABPI, are assessed from pre-treatment to one year post-treatment.

Pretreatment to Posttreatment Changes

Eating disorders symptoms. In order to examine the immediate impact of the outpatient program, changes in self-reported weight and eating disorders symptoms from pre- to immediate post-treatment were examined (Table 1). Self-report weight was used in this analysis. As shown in Table 1, no significant difference was found in self-reported weight from pre- to immediate post-treatment.

Next, participants were asked if they were currently dieting, fasting, exercising, bingeing, vomiting, using laxatives, and using diet pills. They responded "yes" or "no." Subsequently, they were asked how often they exercised, binged, and vomited. Using frequency data, a dichotomous variable for each symptom (e.g., binge) was created: (1) those participants who reported doing each behavior "less than 5 days a week" and (2) those participants who reported doing each behavior "5 times a week or more." The percentage of those currently dieting, fasting, exercising, vomiting, using laxatives, and using diet pills are presented in Table 1, along with the percentage of participants' who reported exercising, bingeing, and vomiting more than five times a week. Differences of the percentages between pre-treatment and immediate post-treatment on these dichotomous variables were examined using the non-parametric McNemar

test (Siegel & Castellan, 1988). Significant changes were found for those participants who were currently dieting (50% vs. 18%), fasting (34% vs. 16%), bingeing (72% vs. 36%), and vomiting (54% vs. 22%) (ps < .05). Additionally, the percentage of participants who binged (46% vs. 10%) and vomited at least 5 days a week (41% vs. 8%) decreased from pre- to post-treatment (ps < .01). No significant differences from pre-treatment to immediate post-treatment were found for rates of participants currently exercising, exercising more than five times a week, and using laxative or diet pills.

In addition, a dichotomous variable was created from scores on the CES-D at pre- and immediate post-treatment. Percentages were calculated for: (1) those who scored below the clinical cutoff score of 16, and (2) those who scored above the cutoff score. Seventy-eight percent of the participants scored above the clinical cutoff at pre-treatment, compared to 58% of the participants at immediate post-treatment ($p < .05$) (Table 1). In sum, a substantial number of the participants demonstrated a significant decrease in eating disorders symptoms from pre-treatment to immediate post-treatment including a decrease in frequency of dieting, fasting, bingeing, vomiting, and depression levels. Despite the significant decrease in those with clinical levels of depression, an alarming fifty-eight percent of the participants scored above the clinical cutoff.

Anorexia and Bulimia Problem Inventory. First, we examined pre- and immediate post-treatment ratings on the 39 vignettes of the ABPI. Paired t-tests were calculated to determine how participants' competence ratings changed on each vignette. Of the 39 vignettes, a significant increase in competency ratings were found for 31 vignettes. These 33 vignettes included all of the items on the Eating and Weight scale, 13 of the 14 vignettes on the Interpersonal Relationships scale, 5 of the 7 vignettes related to Family concerns, and 6 out of

the 11 academic vignettes. After applying a Bonferroni correction and setting the experiment-wise error rate at .001 (.05/39), 18 of the 31 vignettes remained significant. These 18 vignettes included 6 of the 7 vignettes on the Eating and Weight scale, 6 of the 14 vignettes on the Interpersonal Relationships scale, 4 of the 7 Family vignettes, and 2 of the 11 Academic vignettes ($ps < .001$).

Changes on four ABPI-R scales from pre- to immediate post-treatment were examined using a one-sample multivariate Hotelling's t-test. Pretreatment and immediate posttreatment ABPI scale scores were entered in one MANOVA. The one-sample MANOVA revealed an overall statistically significant time effect, (Wilks' lambda = .27, F (4, 46) = 30.51, $p < .001$; η^2 = .73). Follow-up paired-sample t-tests revealed significant increases in competence ratings for all four of the scales (see Table 2). The largest increase from pre- to immediate post-treatment was in the area of Eating and Weight, F (1, 49) = 92.73, $p < .001$, η^2 = .65. A similar increase was found for the Interpersonal Relationships scale, F (1, 49) = 72.07, $p < .001$, η^2 = .60. Significant increases in competence were also found for the Academic scale, F (1, 49) = 44.83, $p < .001$, η^2 = .48 and the Family scale , F (1, 49) = 45.54, $p < .001$, η^2 = .48.

Standardized instruments. Changes on the EDI-2 and CES-D from pre-treatment to immediate post-treatment were examined using a one-sample multivariate Hotelling's t-test (Table 2). Pre-treatment and immediate post-treatment CES-D total scores and scores from the eight EDI-2 scales were entered in one MANOVA. The one-sample MANOVA revealed an overall statistically significant effect (Wilks' Lambda = .27, F (9, 41) = 12.13, $p < .0001$; 0^2 = .73). Because we conducted 9 tests with this analysis, a Bonferroni correction method was employed to control the experimentwise error rate, and the error rate was set at $p < .004$. Follow-up paired sample t-tests revealed that the study sample reported a significant decrease in

depression levels, eating disorders symptoms, and personality characteristics as measured on the EDI-2 scale, with the exception of the EDI Interpersonal Distrust scale. Unfortunately, as demonstrated with the CES-D, these findings do not indicate whether the statistical change is indeed clinically significant.

Reliable and clinically significant change on EDI-2. Although significant change from pre-treatment to immediate post-treatment was found on the EDI-2, this does not indicate that the women were successfully treated. Therefore, the clinical significance of these changes were evaluated with criteria recommended by Jacobson, Follette, and Revenstorf (1984). Jacobson et al. (1984) define a reliable change score as one in which the difference score (pre-treatment – post-treatment) equals or exceeds the instruments' standard error of measurement. The percentage of participants who demonstrated a reliable and clinically significant change on the EDI-2 scales was calculated. In this case, participants achieved a clinically significant change by meeting criteria for a reliable change and having a post-treatment score similar to that of an individual who did not have an eating disorder. Using change score and cutoff score data provided by Davis, Olmsted, and Rockert (1990), Table 3 displays the two criteria for each of the EDI-2 scales, the percentage of participants who were eligible to be evaluated, and then the actual percentage who achieved a reliable and clinically significant change.

To summarize, approximately 81 – 84% of the sample achieved a reliable and clinically significant change on the EDI Drive for Thinness scale, 69% - 73% achieved this on the EDI Bulimia scale, and 61% - 71% achieved this criteria on the EDI Body Dissatisfaction scale. However, the treatment was less successful in changing personality features as measured by the remaining EDI scales. Because the treatment program appeared to have a differential impact for

the participants, an attempt was made to identify pre-treatment variables associated with clinician-rated outcome.

Predictors of clinician-rated treatment outcome. Once each participant terminated treatment, both treating therapists completed several questions for each participant about her treatment involvement and success, including compliance, participation level, involvement in therapy, ability to share experiences, resistance to suggestions, establishment of independence, and whether she made outside social contacts. Clinicians rated each of the questions on a five-point scale from "not at all" to "excellent." Resistance to suggestions was reverse scored. Interrater agreement between the clinicians was .70. A composite "success score" was created by averaging the clinician's ratings for each item and summing across the items. This score was used as the dependent variable in a multiple regression analysis. Based on previous literature, the following variables were entered in a simultaneous fashion as independent variables: age at admission, type of eating disorder (1 = anorexia, 2 = bulimia), CES-D (depression) total score at admission, age at first diet, age that participant first induced vomiting, vomiting frequency, number of previous psychological treatments, and daily preoccupation with food and weight (percent time thinking about food and weight).

Multiple regression analysis results predicting clinicians' ratings of "success" are presented in Table 4. As shown, the eight predictor variables accounted for 50% of the variance in treatment outcome as rated by the clinicians. Type of eating disorder ($\beta = .37$) was the single best predictor of treatment success; participants with bulimia were rated as more successfully in the treatment program than those participants with anorexia. Additionally, depression at pre-admission ($\beta = -.34$) and preoccupation with food and weight ($\beta = -.26$) were also significantly predictive of treatment success; participants with lower levels of depression and those

participants with less preoccupation with food and weight were rated as more successful by clinicians. Although not statistically significant, participants who induced vomiting at a later age were rated as more successful than those participants who reported first induced vomiting at a younger age.

Pretreatment through one year Post-Treatment Changes

Eating Disorders Symptoms. Table 5 displays the self-reported weight of participants across the four time points. With respect to weight, a significant increase in self-reported weight was found from pre-treatment to one year post-treatment. No other significant changes were found. In addition, the table contains the percentage of participants at each time interval who indicated that they were currently dieting, fasting, exercising, bingeing, vomiting, using laxatives, and using diet pills. Percentages of those who indicated that they exercised, binged, and vomited at a frequency of 5 times a week or more are also provided.

Examining the pattern of symptoms across the time intervals reveals some interesting patterns. Recall that we reported significant improvement from pre-treatment to post-treatment in decreasing the percentage of participants who were dieting, fasting, bingeing, and vomiting. From immediate post-treatment to six months post-treatment, improvements in fasting and vomiting were maintained; however, there was a significant increase in the percentage of participants who reported dieting and bingeing. This increase in dieting and bingeing from post-treatment to six months post-treatment disappears at one year post-treatment, where the percentages resemble those at immediate post-treatment. Finally, approximately 49% of the participants scored above the clinical cutoff on the CES-D at one year post-treatment, indicating substantial levels of clinical depression.

Standardized instruments. Scores on the EDI-2 and CES-D at pre-treatment, immediate post-treatment, six months post-treatment, and one year post-treatment were examined in a one-sample multivariate repeated measures (time) analysis (Table 6). CES-D total score and scores from the eight EDI-2 scales for each time interval were entered in one MANOVA. The one-sample MANOVA revealed an overall statistically significant effect for time (Wilks' Lambda = .31, $F(9, 39) = 7.12$, $p < .001$; $0^2 = .32$). Because we conducted 9 tests with this analysis, a Bonferroni correction method was employed to control the experimentwise error rate, and the error rate was set at $p < .004$. Follow-up univariate F-tests revealed that a significant time effect was found for the CES-D and all of the eight EDI-2 scales (ps < .004). Post-hoc tukey comparisons indicated that the differences primarily occurred between pre-treatment and post-treatment time intervals. For example, on the CES-D, there was a significant difference between pre-treatment and all three post-treatment scores (ps < .003); however, there was not a significant difference between scores at immediate post-treatment and six months post-treatment. Similarly, no substantial difference between six months post-treatment and one year post-treatment was found. A related pattern was found on the EDI-2 scales across the time interval; significant differences were found between pre-treatment and immediate post-treatment on all these scales (ps < .001) with the exception of the Interpersonal Distrust scale. No significant differences were found from immediate post-treatment to six months post-treatment, and no differences were found from six months post-treatment to one year post-treatment. With few exceptions, pre-treatment scores differed from scores at all post-treatment time intervals.

Status at one year post-treatment. Although significant improvement in eating disorders symptoms was found from pre-treatment to immediate post-treatment, it appeared that a substantial percentage of the participants continued to experience clinical levels of depression

and reported signs of having an eating disorder at one year post-treatment. In order to understand more fully the clinical picture of these individuals at one year post-treatment, a closer examination of their CES-D and EDI-2 scale scores was warranted. As a result, a clear pattern emerged in which three distinct groups were identified: 1) participants with CES-D scores below the clinical cutoff and scores below the clinical cutoff on the EDI-2 Drive for Thinness, Bulimia, and Body Dissatisfaction scales (improvers) (see Table 3); 2) participants with CES-D scores above the clinical cutoff and scores on the three EDI-2 scales below the clinical cutoff (depressed only); and 3) participants with scores above the clinical cutoff score for the CES-D and the EDI-2 scales (depressed with eating disturbance). Twenty-one of the participants (44%) fell in the first group, ten participants were placed in the second group (21%), and seventeen were in the third group (35%).

Once we discerned these three groups, we were interested in identifying potential differences that may have contributed to the varying outcomes at one year post-treatment. Given the nature of changes from pre- to post-treatment, we considered whether more "successful" women continued treatment elsewhere, which might help to maintain treatment gains. That is, do these women differ at one year post-treatment because some continued to seek treatment while others did not? Although we can not speak to the quality of the treatment these women received after completing the outpatient program, there was relatively little difference in the amount of treatment these women received. Between the completion of treatment and six month follow-up, 81% of those with no symptoms and no depression reported receiving some form of treatment after completing our program compared to 70% in the depressed only group and 88% in the group with symptoms and clinical levels of depression, χ^2 (2, N = 48) = 1.38, $p > .05$. In contrast, from six months post-treatment to one year post-treatment there was a significant group

difference in those seeking treatment; approximately 19% of the improvers indicated they received treatment during this time interval, compared to 40% of the participants who were depressed only and 60% of those with symptoms and depression, χ^2 (2, N = 48) = 6.38, p < .04. The continuation of treatment, therefore, does not seem to be associated with group differences in symptom improvement.

Next, we collapsed the three groups into two groups: 1) those participants with no symptoms or depression and 2) those participants with clinical levels of depression and those with depression and symptoms. There were two reasons underlying our decision to collapse these groups. First, in order to gain some understanding of how these groups differ across a number of variables, we needed to have larger sample sizes. Second, given that clinical levels of depression may potentially place an individual at risk for engaging in eating disordered behavior, we considered clinical levels of depression at one year post-treatment to represent a poor outcome. For presentation purposes, the former group was referred to as improvers and the latter group as the non-improvers. There is some evidence in the literature that women with eating disorders who have concomitant characteriological disorders (e.g., borderline personality disorder, passive-aggressive disorder) and other psychiatric diagnoses (e.g., anxiety disorder) at pre-admission are less responsive to outpatient eating disorders program. Additionally, high levels of depression and low levels of interoceptive awareness (ability to label and express emotion) at pre-admission have also been associated with worse outcomes in longitudinal follow-up investigations. Given these findings, improvers and non-improvers were compared on their pre-admission CES-D scores, EDI-2 Interoceptive Awareness scale score, and the MCMI Borderline Personality Disorder, Dependent Personality Disorder, Histrionic Personality Disorder, Passive-Aggressive Personality, and Anxiety Disorder scale scores. These scores were

entered in one MANOVA and the overall group effect was statistically significant effect (Wilks' Lambda = .61, $F(7, 41) = 3.59$ $p < .01$; $0^2 = .39$). Although we recognize that we should control our overall experiment-wise error rate, we chose not to do so because of our small sample size, thus these results should be interpreted with caution. Consistent with previous literature non-improvers had significantly higher levels of depression at pre-admission and greater lack of interoceptive awareness than improvers (ps < 05). Further, non-improvers when compared to improvers had significantly higher scores at pre-admission on the MCMI Borderline Personality Disorder scale ($p < .01$), the Anxiety Disorder scale ($p < .001$), and the Passive-Aggressive Personality Disorder scale ($p < .001$). No significant group differences were found on the other MCMI scales.

Discussion

The results of the present investigation indicated that women who attended an 8-week outpatient program for eating disorders demonstrated significant improvement from pre-treatment to immediate post-treatment. That is, a significant decrease in depression and disordered eating among study participants was found during this time period. These findings held even when strict criteria were applied to the changes on a standardized measure of disordered eating, which provided further evidence that a substantial percentage of this sample demonstrated a clinically significant change in symptoms.

In addition, several pre-treatment variables were found to be predictive of clinician-rated success at the end of treatment; women with anorexia, clinical levels of depression, and a greater daily preoccupation with food and weight were rated as less successful by the clinicians. These findings are consistent with previous investigations (Davis et al., 1992; Hsu & Sobkiewicz, 1989) in which higher levels of depression are indicative of less improvement in short and long-

term follow-up points. Implications for treatment include the need to consider a more intensive treatment approach, including a referral to an inpatient or residential program or the consideration of psychotropic intervention. The finding that women with anorexia are less likely to respond to the outpatient program was also consistent with previous research. For many years, clinicians recognize that women with anorexia often require a more intensive treatment approach with a longer duration for successful outcome.

Although the noted improvements from pre-treatment to post-treatment were maintained through the one year follow-up period, additional gains were not found. In other words, no substantial decrease in eating disordered or depressive symptoms were found during the period from immediate post-treatment to the one year follow-up, and in fact, there was an increase in the percentage of women that were dieting from immediate post-treatment and the 6 months follow-up period. A disturbing finding was that approximately 40% to 50% of the women reported clinical levels of depression at all three post-treatment time points.

A closer examination of the participants' responses at the one year follow-up point yielded three interesting groups, including participants who were symptom-free, representing about half of the sample, those who were depressed but reported no eating disordered symptoms, and a final group that reported both clinical levels of depression and disordered eating thoughts and behaviors. We can speculate about these three groups and argue that the treatment program had a differential impact across the participants. Some are significantly improved and probably maintain these gains over time, others report a reduction in disordered symptoms and report an increase in depressive symptoms. This is likely due to the fact that these latter individuals' eating disorder served as a coping strategy to manage negative situations and stress, and as the symptoms were treated, their depression became magnified. Finally, the group with symptoms

and depression may include those individuals for which their eating disorder is intractable, meaning that a more intensive approach of treatment may be warranted. Both groups require additional treatment, whether it is for the unmasked depression or the combination of the depression and eating symptoms.

Another interesting finding that appeared in this investigation was the fact that 80% of the participants attended some form of treatment after completing the 8-week outpatient program up until the 6 month post-treatment follow-up. This likely contributed to our finding that, as a group, there were no significant increases in symptoms or depression after immediate post-treatment. This is not to say that individuals did not have significant increases in symptoms during this time, only that the gains as a group were maintained. With that in mind, our findings indicate some initial support for the inclusion of after-care components in the treatment program, even for those individuals who appear to be relatively symptom-free at the end of treatment. This has important ramifications for insurance companies who make decisions about the number of sessions allotted for the treatment of eating disorders, especially when patients report no symptoms at immediate post-treatment. Our recommendation would be to consider allowing additional expenditures for after-care sessions, including individual, family and group psychotherapy, to ensure that improvements are maintained and to prevent relapse.

A final finding relates to depression and personality disturbance as potential predictors of treatment outcome at the one year follow-up. When a good outcome was defined for those individuals with no depression or symptoms and a bad outcome was defined for participants with depression and/or disordered eating thoughts and behaviors, pre-treatment depression and personality disturbance differentiated the two groups. A poor outcome at one year post-treatment was associated with higher levels of depression, anxiety, and personality disturbance at

pre-treatment. Although these results should be interpreted with caution given the limitations of the current investigation (e.g., small sample size, no control group), they are consistent with previous research (Steiger et al., 1994) that suggests that women with eating disorders who present with significant psychopathology may require more intensive treatment approaches.

References

American Psychiatric Association (1987). Diagnostic statistical manual of mental disorders (revised 3rd edition). Washington, DC: Author.

Blouin, J.H., et al. (1994). Prognostic indicators in bulimia nervosa treated with cognitive-behavioral group therapy. International Journal of Eating Disorders, 15, 113-123.

Boyd, J.H., Weissman, M.M., Thompson, D., & Myers, J.K. (1982). Screening for depression in a community sample: Understanding the discrepancies between depression symptom and diagnostic scales. Archives of General Psychiatry, 39, 1195-1200.

Davis, R., Olmsted, M.P., & Rockert, W. (1990).). Brief group psychoeducation for bulimia nervosa: Assessing the clinical significane of change. Journal of Consulting and Clinical Psychology, 58, 882-885.

Davis, R., Olmsted, M.P., & Rockert, W. (1992). Brief group psychoeducation for bulimia nervosa, II: prediction of clinical outcome. International Journal of Eating Disorders, 11, 205-211.

Eason, B. J. (1983). Social competence and problem-solving abilities in anorexic, bulimic, and non-eating disordered females: Empirical development of a role-playing instrument (Doctoral Dissertation, Indiana University, 1983). Dissertation Abstracts International, 44, 8401599.

Espelage, D.L., & Quittner, A.L. (1997). Anorexia and Bulimia Problem Inventory – Revised (ABPI-R). Unpublished manuscript.

Espelage, D., Quittner, A., & Kamps, J. (1998). An application of generalizability theory to the validation of a behaviorally-anchored role-play measure. Paper presented at the Annual meeting of the American Educational Research Association, San Diego, CA.

Espelage, D.L., Quittner, A.L., Sherman, R., & Thompson R. (under review). Validation of an Eating Disorders Problem Inventory: Application of the Behavior-Analytic Approach. Psychological Assessment.

Garner, D. (1991). EDI-2: Eating Disorders Inventory-2: Professional Manual. Odessa: Psychological Assessment Resources.

Garner, D.M., Olmsted, M.P., & Polivy, J. (1983). Development and validations of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. International Journal of Eating Disorders, 2, 15-34.

Goldfried, M.R., & D'Zurilla, T.J. (1969). A behavior-analytic model for assessing competence. In C.D. Spielberger (Ed.), Current topics in clinical and community psychology (Vol. 1, pp. 151-196). New York: Academic.

Hsu, L.K.G., & Holder, D. Bulimia nervosa: treatment and short-term outcome (1986). Bulimia nervosa: treatment and short-term outcome. Psychological Medicine, 16, 65-70.

Hsu, L.K.G., & Sobkiewicz, T. (1989). Bulimia nervosa: a four- to six-year follow-up study. Psychological Medicine, 19, 1035-1038.

Jacobson, N.S., Follette, W.C., & Revenstorf, D. (1984). Psychotherapy outcome research: Methods of reporting variability and evaluating clinical significance. Behavior Therapy, 15, 336-352.

Johnson-Sabine, E., Reiss, D., & Dayson, D. (1992). Bulimia nervosa: a 5-year follow-up study. Psychological Medicine, 22, 951-959.

Keller, M.B., Herzog, D.B., Lavori, P.W., Bradburn, I.S., & Mahoney, E.M. (1992). The naturalistic history of bulimia nervosa: Extraordinarily high rates of chronicity, relapse, recurrence, and psychosocial morbidity. International Journal of Eating Disorders, 12, 1-9.

Orme, J.G., Reis, J., & Herz, E.J. (1986). Factorial and discriminant validity of the Center for Epidemiological Studies Depression (CES-D) Scale. Journal of Clinical Psychology, 42, 28-33.

Raciti, M.C., & Norcross, J.C. (1987). The EAT and EDI: Screening, interrelationships, and psychometrics. International Journal of Eating Disorders, 6, 579-586.

Radloff, L.S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. Applied Psychological Measurement, 1, 385-401.

Santor, D.A., Zuroff, D.C., Ramsay, J.O., Cervantes, P., & Palacios, J. (1995). Examining scale discriminability in the BDI and CES-D as a function of depressive severity. Psychological Assessment, 7, 131-139.

Shaw, B.F., & Garfinkel, P.E. (1989). Research problems in the eating disorders. International Journal of Eating Disorders, 9, 545-555.

Sohlberg, S.S., Norring, C.E., & Rosmark, B.E. (1992). Prediction of the course of anorexia/bulimia nervosa over three years. International Journal of Eating Disorders, 12, 121-131.

Steiger, H., Leung, F., & Thibaudeau, J. (1993). Prognostic value of pretreatment social adaptation in bulimia nervosa. International Journal of Eating Disorders, 14, 269-276.

Steiger, H., Stotland, S., & Houle, L. (1994). Prognostic implications of stable versus transient "borderline features" in bulimic patients. Journal of Clinical Psychiatry, 55, 206-214.

Wear, R.W., & Pratz, O. (1987). Test-retest reliability for the Eating Disorder Inventory. International Journal of Eating Disorders, 6, 767-769.

Table 1. Pre-treatment and Immediate Post-Treatment Mean Weight, Percentages of Participants Reporting Eating Disorders Symptoms

	Time Interval				
	Pre-treatment (N = 50)		Immediate Post-Treatment (N = 50)		
Variable	M	SD	M	SD	T
Self-reported Weight	122.20	21.67	125.84	20.46	1.35
Symptom	%age		%age		McNemar Test p value
Currently dieting	50.0		18.0		.00
Currently fasting	34.0		16.0		.02
Currently exercising	85.3		88.2		.69
Exercising more than daily	28.0		30.0		.90
Currently bingeing	72.2		36.0		.00
Bingeing more than daily	46.0		10.0		.00
Currently vomiting	54.0		22.1		.00
Vomiting more than daily	40.5		8.1		.00
Currently using laxatives	15.8		3.9		.11
Currently using diet pills	5.8		2.0		.50
Clinically depressed	78.0		58.0		.04

Table 2. Means and Standard Deviations for Pre-treatment and Immediate Post-treatment ABPI, CES-D, and EDI-2 Scales

	Time Interval					
	Pre-treatment (N = 50)		Immediate Post-Treatment (N = 50)			
Instrument & Scale	M	SD	M	SD	t	0^2
ABPI Scales						
Eating & Weight	2.21	.63	2.97	.53	92.73*	.65
Interpersonal Relation.	2.64	.45	3.12	.33	72.07*	.60
Academic Concerns	2.39	.43	2.78	.42	44.83*	.48
Family Issues	2.59	.57	3.01	.51	45.54*	.48
CES-D	27.44	13.23	19.69	14.06	12.30*	.20
EDI Scales						
Drive for Thinness	13.80	4.05	7.56	5.19	52.95*	.52
Bulimia	8.82	5.82	1.78	2.77	89.02*	.65
Body Dissatisfact.	16.32	7.16	10.89	7.50	28.89*	.37
Ineffectiveness	9.84	7.22	5.70	6.61	13.88*	.22
Perfectionism	8.43	4.66	5.79	4.39	20.60*	.30
Interpersonal Distrust	5.20	4.49	4.32	4.29	3.44	.07
Interoceptive Aware.	11.49	6.84	6.28	5.95	28.25*	.37
Maturity Fears	4.63	4.34	2.27	3.25	16.04*	.25

* $p < .001$

Table 3. Percentage of Participants Demonstrating a Reliable and Clinically Significant Change on the EDI-2 from Pre-treatment to Post-treatment

	Change Index					
	Reliable Change			Clinically Significant Change		
EDI Scales	Change Score	% Eligible[a]	% Achieved	Cutoff Score	% Eligible[b]	% Achieved
Eating Symptoms						
Drive for Thinness	6	91	84	9	91	81
Bulimia	6	82	73	3	71	69
Body Dissatisfact.	7	88	61	12	82	71
Personality Features						
Ineffectiveness	6	58	52	5	53	48
Perfectionism	6	71	38	7	65	57
Interpersonal Distrust	5	44	30	3	59	30
Interoceptive Awareness	8	50	29	5	47	56
Maturity Fears	5	35	83	3	32	73

[a] Percentage of participants with a pre-treatment score greater than or equal to minimum change score.

[b] Percentage of participants with a pre-treatment score greater than or equal to minimum change score and cutoff score.

Table 4. Multiple Regression Analysis of Pre-Treatment Prognostic Indicators Predicting Clinician-Rated Success at Immediate Post-Treatment

Pre-Treatment Variable	b	SE (b)	β	t
Age (Years)	-.04	.18	-.04	-.27
Type of Eating Disorder[a]	3.57	1.19	.37	2.98**
CES-D	-.11	.04	-.34	-2.73**
First Diet (age)	-.32	.26	-.15	-1.22
First Induced Vomiting (age)	.41	.25	.24	1.65
Vomiting Frequency	-.30	.20	-.17	-1.50
No. Previous Treatments	-.19	.23	-.10	-.81
Daily Preoccupation with Food/Weight (% of daily time thinking)	-.05	.03	-.26	-2.14*

[a] 1 = anorexia, 2 = bulimia
Full model statistics: $R^2 = .50$, $F(8, 41) = 5.07$**
* $p < .05$, ** $p < .01$

Table 5. Pre-treatment, Immediate Post-Treatment, 6 months and 1 year Post-Treatment Mean Weight, Percentages of Participants Reporting Eating Disorders Symptoms (N = 48)

	Time Interval							
Variable	Pre-treatment (N = 48)		Immediate Post-Treatment (N = 48)		6 months Post-Treatment (N = 48)		1 year Post-Treatment (N = 48)	
	M	SD	M	SD	M	SD	M	SD
Self-reported Weight	123.74	21.87	125.48	20.09	128.78	21.52	131.83	24.81
Symptom	%age		%age		%age		%age	
Currently dieting	56.3		18.8		36.7		22.4	
Currently fasting	33.8		16.7		8.2		10.4	
Currently exercising	79.2		85.4		89.6		87.8	
Exercising 5 times a wk. or more	29.2		31.3		39.1		32.6	
Currently bingeing	79.2		37.5		47.9		38.8	
Bingeing 5 times a wk. or more	45.9		10.5		10.5		10.5	
Currently vomiting	60.4		25.0		29.8		32.7	
Vomiting 5 times a wk. or more	41.6		8.3		8.5		8.2	
Currently using laxatives	16.7		4.2		6.3		2.0	
Currently using diet pills	6.3		2.1		4.1		2.0	
Clinically depressed	77.1		56.2		42.7		48.9	

31

Table 6. Means and Standard Deviations for Pre-treatment and Immediate, 6 Months, and 1 Year Post-Treatment ABPI and EDI-2 Scales

	Time Interval									
	Pre-treatment (N = 48)		Immediate Post-Treatment (N = 48)		6 months Post-Treatment (N = 48)		1 year Post-Treatment (N = 48)			
Instrument & Scale	M	SD	M	SD	M	SD	M	SD	F	0^2
CES-D	26.46	12.60	19.67	14.35	17.38	14.15	16.77	13.04	25.99**	.18
EDI Scales										
Drive for Thinness	13.64	4.06	7.72	5.17	7.59	5.44	6.66	5.32	34.91**	.43
Bulimia	8.89	5.89	1.82	2.82	1.92	3.68	1.98	3.51	51.93**	.53
Body Dissatisfact.	16.32	6.98	11.04	7.58	12.12	8.48	12.21	8.24	13.67**	.23
Ineffectiveness	9.45	7.12	5.78	6.73	5.64	6.87	5.28	7.19	9.07**	.16
Perfectionism	8.36	4.74	5.80	4.48	6.90	4.51	6.98	5.02	6.72**	.13
Interpersonal Distrust	5.13	4.45	4.37	4.36	4.00	4.65	3.38	4.99	4.71*	.09
Interoceptive Aware.	11.03	6.55	6.41	6.01	5.56	5.94	6.19	6.64	17.29**	.27
Maturity Fears	4.29	4.07	2.28	3.32	1.91	2.97	1.76	2.44	9.76**	.17

* $p < .004$, ** $p < .001$

Table 7. Pre-Treatment CES-D, EDI-2 Interoceptive Awareness Scale, and MCMI Scale Scores for Improvers and Non-improvers at One Year Post-Treatment

	Group				
	Improvers (N = 21)		Non-Improvers (N = 27)		
Instrument & Scale	M	SD	M	SD	F
CES-D	21.79	11.06	30.09	12.71	5.63*
EDI Interoceptive Awareness (Lack of) Scale	8.37	6.09	13.10	6.23	6.94*
MCMI Scales					
Dependent Personality Disorder	58.81	28.77	67.63	24.88	1.29
Histrionic Personality Disorder	77.71	22.96	68.26	24.77	1.83
Passive-Aggressive Personality Disorder	66.19	29.57	81.59	21.84	4.32**
Borderline Personality Disorder	58.62	16.57	74.78	20.80	8.48**
Anxiety Disorder	49.14	23.90	79.26	21.29	21.24***

* $p < .05$, ** $p < .01$, *** $p < .001$